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ABSTRACT

This study investigated the relationship of birth order to three conditions in which the severity of sustained injury tends to increase: (a) individual contact sports, (b) team contact sports, and (c) individual noncontact sports. Operating on the assumption that each of these conditions generated progressively greater degrees of fear regarding personal injury or death, the following hypotheses were advanced: (a) firstborn males are likely to indicate a lower preference for all three conditions of dangerous sports than later-born males, and (b) as each condition becomes progressively more dangerous, there is a correspondingly greater difference between firstborn and later-born preference. The subjects of the study were 67 firstborn and 99 later-born male college students. They were compared on their preference for participation in such sports as judo, football, lacrosse, sky diving, ski jumping, and motorcycle racing, among others. The results indicated that in general, firstborns were more likely to avoid dangerous sports than later-borns. The greatest discrimination was found in those sports in which the severity of physical injury is perceived to be high and the opportunity to attain a measure of security and peer support under stress is perceived to be low. (A list of references is included.) (Author/JS)

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Birth Order and Preference for Dangerous Sports Among Males

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Works of theoretical scope which attempt to analyze and predict the psychosocial dimensions of sport preference are few indeed. It is primarily in the last ten years that we have witnessed the emergence of a group of investigators whose research interests in sport have served to identify and legitimate the domain as an area of study (6, 10, 11, 14, 18, 20). One area in particular, which appears to have stimulated some cumulative research especially among psychologists, is that of birth order. In fact, since the publication of Schachter's (16) The Psychology of Affiliation, in which the author reported that under stress, first borns became more anxious, were more likely to affiliate and were more fearful of the prospect of physical harm, much replication and expansion of the theory has taken place. Defee and Himelstein (1) found, in a study with young children, that in a dental situation, first borns were less cooperative with the dentist, were more fearful, cried more and appeared to be more sensitive to pain. Longstreth (9) demonstrated that both first born males and females were more timid about dangerous sports, a finding which supports Nisbett's (13) results. Nisbett, in his study with participants in soccer, rugby and football concluded that:

> The underrepresentation of first borns in the dangerous sports is not a pronounced effect but it is a consistent one. In high school, college, and professional athletics, first borns are less likely to play the high risk sports.

Finally, Helmreich and Collins (3) reported that the prospect of physical harm may be more aversive to first borns, while Torrance (19) found that first borns tended to be less effective pilots under stress conditions involving physical danger.

Intriguing as these findings may be, they are of little theoretical

consequence by themselves until the various explanations offered are discussed in connection with birth order as a socio-psychological concept. It has been suggested, for example, that there may exist consistent variations in parental behavior toward first and later born children. Koch (7) reported that parents pay more attention to first borns; Lasko (8) found parents to be more directive with their first born; Sears et al. (17) pointed to an inconsistency in child training with first born children which was not evident in the training of later borns. Hilton (4), in testing the concept of birth order and affiliative behavior, found that in accord with Sears et al., first borns were more interfered with by their mother and were more extremely and inconsistently treated than later borns. Hilton concluded that psychological dependence may result from such forms of child training since constant interference tends to undermine the child's opportunity to "develop and internalize standards of behavior" which he may then use as referents for independent decision-making.

It would appear, therefore, that constant interfering and "fussing over," coupled with inconsistent socialization practices tend to create certain identifiable behavior patterns in first borns; consequently, these may predispose such individuals to respond to threatening situations, especially of the kind involving the prospect of physical harm, by avoidant and dependent behaviors.

Given that first borns tend to respond with more fear to the prospect of physical harm and are more likely to avoid dangerous sports, it would seem logical to hypothesize some relationship between birth order and

types of dangerous sports engaged in. It will be noted that the only study dealing with sport participants and birth order (13) focused primarily on certain team contact sports. Individual contact sports such as judo and wrestling, where the prospect of injury exists to a degree have never been investigated. And what of individual non-contact sports such as sky diving, gymnastics and rock climbing? One would expect first borns to consider the prospect of physical harm extremely high in these activities, given that merely the prospect of receiving electric shock in Schachter's study was sufficient to arouse fear in his subjects.

Purpose of the study and hypotheses

In view of the preceding discussion, it was the purpose of this study to investigate the relationship of birth order to three conditions in which the severity of sustained injury tends to increase: Condition 1, individual contact sports; condition 2, team contact sports; and condition 3, individual non-contact (high risk) sports. Operating on the assumption that each of these conditions generates progressively greater degrees of fear regarding personal injury, or death, the following hypotheses were advanced:

1. First borns are likely to indicate a lower preference for all three conditions of dangerous sports than later borns.

2. As the condition becomes progressively more dangerous, there is a correspondingly greater difference between first and later born sport preference.

In generating hypothesis 2, it was expected that the greatest discrimination between first and later borns would occur in condition 3 (individual non-contact high risk sports). The logic of this was based

on several theoretical considerations. Firstly, the conditions under which these sports are performed (sky diving, scuba, etc.) tend to make great demands on the individual in terms of independence and self confidence, requiring a certain degree of adventurousness. Also, the prospect of physical injury, real or perceived, can be a great source of fear arousal; given that first borns, under fear conditions, need to affiliate more so than later borns (3, 15, 16), and given that these sports offer limited opportunity for affiliation, first borns are likely to differ most from later borns in this condition.

Procedures

The subjects were 166 male students attending a western state university in the spring of 1973. Sixty seven were first born and ninety nine later born. The proportion of first to later born participants (.40 in this study) appears to be consistent with findings by this investigator at a northeastern university (.44) and a southwestern state university (.35) (20).

In comparing the two groups, the following characteristics were controlled for: Age (18-24 years); social class (white collar representing classes 1, 2, and 3 on Hollingshead's Two-Factor Index of social position (5)). This was necessary as Yiannakis (20), in an earlier study, pointed out that first borns from blue collar homes tend to be underrepresented in college.

The subjects were identified from an original sample of 244 persons who were participants in non-required physical education and club classes. To ensure representativeness, one section from classes with multiple sections was drawn using simple random sampling procedures. All persons

from clubs and one section activities were included, where possible.

Biographical information was obtained by means of a questionnaire which was administered by the investigator prior to the beginning of each activity. Degree of sport preference was ascertained by asking the respondents to indicate, on a seven point scale, the frequency with which they would enjoy participating in a selected list of sports (1=twice or more a week; 7=never). From this procedure, degree of liking, or preference, was inferred. Such an inference is warranted as according to Heinila (2), the relationship between attitude toward a sport and actual participation is in the region of .56.

Finally, the three sport conditions were comprised as follows: Condition 1 (low severity), judo, boxing and wrestling; condition 2 (intermediate severity), football, ice hockey, lacrosse, soccer and rugby; and condition 3 (high severity), sky diving, rock climbing, motorcycle racing, ski jumping, scuba, gymnastics and flying.

The three conditions were generated by asking nine physical education professors to indicate the severity of injury, which, in their professional opinion tends to be associated with each one.

Method of Analysis

Hypothesis 1 and 2 were tested in each of the three sport conditions using discriminant analysis. In addition to testing for statistical significance, an attempt was made to determine, using Mahalanobis' D^2 (12), whether the obtained differences between the two groups were substantial enough to be considered of practical value. D^2 represents the squared distance between two points of profile scores. Thus, the

greater the distance between two profiles is, the more dissimilar the two groups are likely to be (and significantly different). The alpha level of significance was set at .01.

Results

In testing hypothesis 1, under sport condition 1 (individual contact sports), discriminant analysis yielded a D^2 of .413. The probability of obtaining a coefficient of this magnitude is less than .01. However, a distance between profile scores of .413 is not sufficiently great to be of any practical value. It can be safely assumed, therefore, that the sport preference of first borns with regard to individual contact sports does not differ, in reality, from that of later borns.

Table 1 presents the results of discriminant analysis with team contact sports. It is evident that in all but one case (rugby), first borns indicated a lower preference for these activities. The obtained generalized D^2 of 1.81 and its associated F statistic of 14.10 lends

TABLE 1

RESULTS OF DISCRIMINANT ANALYSIS WITH TEAM CONTACT SPORTS

Sport	First Born (mean scores) (67)	Later borns (mean scores) (99)	Discriminant space coordinates 1	2	Scaled vectors*
Football	3.25	3.00	.30	.22	15.19
Rugby	5.09	5.29	.27	.37	-20.13
Soccer	3.72	3.66	.14	.13	2.26
Ice Hockey	5.49	5.44	.57	.56	1.94
Lacrosse	5.63	5.55	.84	.79	8.40
			-5.36	-5.26	

Generalized Mahalanobis D^2=1.8s (F=14.10, p less than .01 with df 5,160)

*Scaled vectors show relative contribution of variables to discriminant function

partial support to both hypothesis 1 and 2. It appears that first borns are likely to indicate a lower preference for team contact sports than later borns. In addition, a discernible difference, as indicated by the obtained D^2 of 1.81 suggests a greater separation between the two groups, with football and rugby being the largest contributors. It may be accepted, therefore, that the two groups differ significantly, and to a small degree, in real terms.

Table 2 presents data lending further support to hypothesis 1 and 2. The obtained D^2 of 5.89 and its associated F ratio of 29.77 proved to be significant beyond the .01 level. The largest contributors to the

TABLE 2

RESULTS OF DISCRIMINANT ANALYSIS WITH INDIVIDUAL NON-CONTACT (DANGEROUS) SPORTS

Sport	First borns (means scores) (67)	Later borns (mean scores) (99)	Discriminant space coordinates 1	2	Scaled Vectors*
Rock climbing	4.57	4.41	.64	.67	3.76
Motorcycle racing	5.03	4.62	.56	.51	-7.80
Sky diving	5.19	4.73	.71	.62	-13.19
Gymnastics	4.80	4.16	.63	.51	-17.91
Ski jumping	5.52	5.29	.81	.79	-2.67
Scuba	4.06	3.90	-.43	-.33	16.50
Flying	4.23	3.76	-.26	-.29	-5.60
			-7.06	-6.07	

Generalized Mahalanobis D^2=5.89 (F=29.77, p less than .01 with df 7,158)

*Scaled vectors show relative contribution of variables to discriminant function.

discriminant function, in this condition (individual non-contact sports), were gymnastics, scuba and sky diving. It becomes fairly evident, therefore, that when all three sport conditions are evaluated, first borns differ more as a group, both significantly and substantially from later borns, in individual non-contact (high risk) sports.

Discussion

Generally, the results are consistent with those of other investigators (9, 13, 19). However, certain differences emerged which warrant further comment. Firstly, the lack of support for hypothesis 1, in sport condition 1 (individual contact sports) is somewhat puzzling, unless such activities do, in fact, fail to create fearful conditions to be considered threatening to first borns. Additionally, the fact that the opportunity to affiliate and seek emotional support, in these sports, is readily available, may also make these activities relatively more attractive to first borns. In contrast, while team contact sports also provide participants with opportunities to seek emotional support under stress, the higher risk involved may discourage many first borns from participating. These observations tend to suggest that it may be the interaction between degree of risk in a sport, coupled with the opportunity to affiliate, which may best differentiate between first and later born preference. Such a theoretical position provides a satisfactory explanation as to why first borns, in this study, were most disposed to avoid those high risk, vertiginous-type activities (condition 3) in which the severity of physical harm can be high, and the opportunity to attain a measure of security and peer support under stress tends to be low.

Conclusion

Within the limitations of this study, the following conclusion seems justified: First borns are more likely to avoid sports in which the severity of physical injury is perceived to be high, and the opportunity to affiliate, under stress, tends to be low.

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